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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,262	01/16/2002	Gerald T. Mearini	GNV 2 0011	9270

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EXAMINER

RAHLL, JERRY T

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 10/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/050,262

Applicant(s)

MEARINI ET AL.

Examiner

Jerry T Rahll

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6,8-11,13-15 and 19 is/are rejected.
- 7) ☒ Claim(s) 5,7,12,16-18,20 and 21 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 June 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 06-2002. 6) ☐ Other: .

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DETAILED ACTION

Drawings

1. The drawings are objected to because the labeling is not uniform and clear. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 8 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,097,859 to Solgaard et al. in view of U.S. Patent No. 3,976,890 to Barnes et al.

5. Solgaard et al. describes an optical switch device for redirecting a beam of light traveling in a first direction to a second direction having, a plurality of input fibers (14), a base member (52), a first microelectromechanical mirror (46a-c) with a reflective panel pivotally connected to

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the base member, a second microelectromechanical mirror (46d-f) to receive light beams reflected by the first microelectromechanical mirror and a plurality of output fibers (24) (see Figures 1-4 and Columns 3-4 and 6-7). Solgaard et al. does not specifically describe the microelectromechanical mirror having a first substrate, a reflective layer disposed above the first substrate and a heat sink layer disposed between the first substrate and the reflective layer.

6. Barnes et al. describes a mirror having a first substrate (10), a reflective layer (12) disposed above the first substrate, and a heat sink layer (14) disposed between the first substrate layer and the reflective layer. Solgaard et al. and Barnes et al. are analogous art because they are from the same field of endeavor of optical beam direction. At the time of invention it would have been obvious to a person of ordinary skill in the art to use the mirror structure of Barnes et al. as the mirror used in Solgaard et al. The motivation for doing this is that Solgaard et al. is mute as to the structure of the mirror used. Therefore, it would have been obvious to use any described mirror structure. Therefore, it would have been obvious to combine Barnes et al. with Solgaard et al. to obtain the invention as specified in the claims.

7. Claims 2-4, 9-11 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Solgaard et al. and Barnes et al. as applied to claims 1 and 8 above, and further in view of U.S. Patent No. 5,580,429 to Chan et al.

8. Solgaard et al. and Barnes et al. do not describe the heat sink layer made of hydrogenated amorphous carbon, diamond-like carbon (DLC) or diamond. Chan et al. describes carbon with diamond-like bonding (hydrogenated amorphous carbon, diamond-like carbon (DLC) as a heat sink material (see Column 2). Barnes et al. and Chan et al. are analogous art because they are from the same field of endeavor of heat sinking. At the time of invention, it would have been

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obvious to one of ordinary skill in the art to use the carbon with diamond-like bonding of Chan et al. in place of the heat sink described in Barnes et al. to reduce cost and manufacture. Therefore, it would have been obvious to one of ordinary skill in the art to combine Chan et al. with Solgaard et al. and Barnes et al. to obtain the invention as specified in the claims.

9. Claims 1 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent No. 6,396,976 to Little et al. in view of U.S. Patent No. 3,976,890 to Barnes et al.

10. Little et al. describes an optical switch device for redirecting a beam of light traveling in a first direction to a second direction having, a plurality of input fibers (16), a base member (14), a microelectromechanical mirror (12) with a reflective panel pivotally connected to the base member, an actuator (43) connected to the base member and the mirror, to move the mirror between a reflective, and a non-reflective state and a plurality of output fibers (24) (see Figures 1a, 1b, 3 and Column 4). Little et al. does not specifically describe the microelectromechanical mirror having a first substrate, a reflective layer disposed above the first substrate and a heat sink layer disposed between the first substrate and the reflective layer.

11. Barnes et al. describes a mirror having a first substrate (10), a reflective layer (12) disposed above the first substrate, and a heat sink layer (14) disposed between the first substrate layer and the reflective layer. Little et al. and Barnes et al. are analogous art because they are from the same field of endeavor of optical beam direction. At the time of invention it would have been obvious to a person of ordinary skill in the art to use the mirror structure of Barnes et al. as the mirror used in Little et al. The motivation for doing this is that Solgaard et al. is mute as to the structure of the mirror used. Therefore, it would have been obvious to use any described

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mirror structure. Therefore, it would have been obvious to combine Barnes et al. with Little et al. to obtain the invention as specified in the claims.

12. Claims 2-4, 6, 9-11 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Little et al. and Barnes et al. as applied to claims 1 and 8 above, and further in view of U.S. Patent No. 5,580,429 to Chan et al.

13. Little et al. and Barnes et al. do not describe the heat sink layer made of hydrogenated amorphous carbon, diamond-line carbon (DLC) or diamond. Chan et al. describes carbon with diamond-like bonding (hydrogenated amorphous carbon, diamond-line carbon (DLC) as a heat sink material (see Column 2). Barnes et al. and Chan et al. are analogous art because they are from the same field of endeavor of heat sinking. At the time of invention, it would have been obvious to one of ordinary skill in the art to use the carbon with diamond-like bonding of Chan et al. in place of the heat sink described in Barnes et al. to reduce cost and manufacture. Therefore, it would have been obvious to one of ordinary skill in the art to combine Chan et al. with Little et al. and Barnes et al. to obtain the invention as specified in the claims.

14. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Barnes et al. in view of Chan et al.

15. Barnes et al. describes a mirror having a first substrate (10), a reflective layer (12) disposed above the first substrate, and a heat sink layer (14) disposed between the first substrate layer and the reflective layer. Chan et al. describes carbon with diamond-like bonding (hydrogenated amorphous carbon, diamond-line carbon (DLC) as a heat sink material (see Column 2). Barnes et al. and Chan et al. are analogous art because they are from the same field of endeavor of heat sinking. At the time of invention, it would have been obvious to one of

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ordinary skill in the art to use the carbon with diamond-like bonding of Chan et al. in place of the heat sink described in Barnes et al. to reduce cost and manufacture. Therefore, it would have been obvious to one of ordinary skill in the art to combine Chan et al. with Barnes et al. to obtain the invention as specified in the claim.

Allowable Subject Matter

16. Claims 5, 7, 12, 16-18 and 20-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

17. Claims 5, 12 and 17 describe the DLC heat sink as having a thickness between 2.0 nm and 4000 nm. Claims 7 and 21 describe the reflective panel having a liquid crystal layer and a transmissive electrode layer. Claims 16 and 20 describe plasma enhanced chemical vapor depositing the DLC on the substrate. Claim 18 describes ion beam depositing the DLC on the substrate. This is subject matter not disclosed or reasonably suggested by the prior art of record.

Conclusion

18. Prior art documents submitted by applicant in the Information Disclosure Statement filed on 16 January 2002 have all been considered and made of record (note the attached copy of form PTO-1449).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry T Rahll whose telephone number is (703) 306-0031. The examiner can normally be reached on M-F (8:00-5:30), with alternate Fridays off.

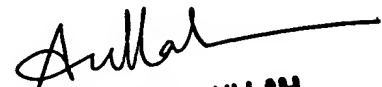
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on (703) 308-4819. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Jerry T Rahll



AKM ENAYET ULLAH
PRIMARY EXAMINER